PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
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PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing *(day/month/year)*	30 MARCH 2005 (30.03.2005)
Applicant's or agent's file reference: 4FPO-11-04	FOR FURTHER ACTION: See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/KR2004/003435	24 DECEMBER 2004 (24.12.2004)	27 DECEMBER 2003 (27.12.2003)

International Patent Classification (IPC) or both national classification and IPC
IPC7 C07D 307/68

Applicant
KOREA RESEARCH INSTITUTE OF CHEMICAL TECHNOLOGY et al

1. This opinion contains indications relating to the following items:

- [x] Box No. I Basis of the opinion
- [ ] Box No. II Priority
- [ ] Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- [ ] Box No. IV Lack of unity of invention
- [x] Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- [ ] Box No. VI Certain documents cited
- [ ] Box No. VII Certain defects in the international application
- [ ] Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later. For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/KR
Korean Intellectual Property Office
920 Dunsan-dong, Seo-gu, Daejeon 302-701,
Republic of Korea
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Authorized officer
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Form PCT/ISA/237 (cover sheet) (January 2004)

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International application No.
PCT/KR2004/003435

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

   ☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

   a. type of material
   - ☐ a sequence listing
   - ☐ table(s) related to the sequence listing

   b. format of material
   - ☐ in wirtten format
   - ☐ in computer readable form

   c. time of filing/furnishing
   - ☐ contained in the international application as filed.
   - ☐ filed together with the international application in computer readable form.
   - ☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additioanl copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

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International application No.
PCT/KR2004/003435

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-10	YES
	Claims		NO
Inventive step (IS)	Claims	1-10	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-10	YES
	Claims		NO

2. Citations and explanations :

Reference is made to the following documents:
D1 = US 5627193 A (06. 05. 1997)
D2 = US 6630506 B1 (07. 10. 2003)
D3 = WO 03-101450 A1 (11. 12. 2003)
D4 = WO 99-33460 (08. 07. 1999)

The present invention relates to furancarbonylguanidine derivatives which can be used as a NHE-1 inhibitor, a preparation method thereof and a pharmaceutical composition comprising the same.

D1 discloses quinoline-4-carbonylguanidine derivative and a preparation method therof and a NHE inhibitor containing the same. D2 discloses acyl guanidines which are used as NHE inhibitors. D3 discloses N-((3-oxo 2,3-dihydro-1H-isoindol-1-yl)acetyl)guanidine derivatives as NHE-1 inhibitors for the treatment of infarction and angina pectoris. D4 discloses acyl guanidine sodium/proton exchange inhibitors and method.

1. Novelty

None of the prior art disclose the compound of formula(I) claimed in the present invention and their property. Therefore, the present invention seems to be novel(PCT Article 33(2)).

2. Inventive Step

Although D1-D5 disclose the compounds showing a similar pharmaceutical activity as the compounds of the present invention, neither structural variation nor combination of different structural features of compounds disclosed therein lead to the structural properties as those described in the present invention. Thus the present invention is regarded as being inventive according to PCT Article 33(3).